

Claims

1. An aqueous solution that is physically stable for at least one week at 5°C comprising an amphiphilic or lipophilic chemical compound, a first solubility-enhancing agent which is a cyclodextrin, and a second solubility-enhancing agent.

5 2. The aqueous solution of claim 1 wherein the chemical compound is metronidazole.

3. The aqueous solution of claim 2 wherein the concentration of metronidazole in the solution is higher than 0.75%.

4. The aqueous solution of claim 3 wherein the concentration of metronidazole in the solution is about 1.0% or higher.

5. The aqueous solution of claim 1 wherein the cyclodextrin is beta-cyclodextrin (BCD).

6. The aqueous solution of claim 5 wherein the BCD is crystalline BCD.

7. The aqueous solution of claim 2 wherein the cyclodextrin is beta-cyclodextrin (BCD).

8. The aqueous solution of claim 7 wherein the BCD is crystalline BCD

9. The aqueous solution of claim 1 wherein the second solubility enhancing agent is niacinamide.

10. The aqueous solution of claim 2 wherein the second solubility enhancing agent is niacinamide.

5 11. The aqueous solution of claim 5 wherein the second solubility enhancing agent is niacinamide.

12. The aqueous solution of claim 1 wherein the second solubility enhancing agent is niacin.

10 13. The aqueous solution of claim 2 wherein the second solubility enhancing agent is niacin.

14. The aqueous solution of claim 5 wherein the second solubility enhancing agent is niacin.

15. The aqueous solution of claim 1 which is a gel.

16. The aqueous solution of claim 2 which is a gel.

15 17. The aqueous solution of claim 11 wherein the concentration of BCD in the solution is 1.0% or less and the concentration of niacinamide is about 1.0% or higher.

18. The aqueous solution of claim 17 which is a gel.

19. The aqueous solution of claim 14 wherein the concentration of BCD in the solution is 1.0% or less and the concentration of niacin is about 0.5% or higher.

20. The aqueous solution of claim 11 wherein the concentration of niacinamide in the solution is below that which, in the absence of BCD, increases the water solubility of metronidazole to the concentration of metronidazole present in the solution.

21. The aqueous solution of claim 11 wherein the concentration of BCD in the solution is below that which, in the absence of niacinamide, increases the water solubility of metronidazole to the concentration of metronidazole present in the solution.

22. The aqueous solution of claim 15 wherein the concentration of niacin in the solution is below that which, in the absence of BCD, increases the water solubility of metronidazole to the concentration of metronidazole present in the solution.

23. The aqueous solution of claim 11 wherein the concentration of BCD in the solution is below that which, in the absence of niacinamide, increases the water solubility of metronidazole to the concentration of metronidazole present in the solution.

24. A method for making an aqueous solution of metronidazole greater than 0.75% comprising combining metronidazole, beta-cyclodextrin (BCD), and niacin or niacinamide in water.

25. The method of claim 24 wherein the metronidazole is added to the water after the BCD and the niacin or niacinamide are dissolved in the water.

26. The method of claim 24 which further comprises, after the combination of metronidazole, BCD, and the niacin or niacinamide, adding a gelling agent.

27. The method of claim 24 wherein niacinamide but not niacin is combined.

28. The method of claim 24 wherein niacin but not niacinamide is combined.

5 29. An aqueous solution that is made by the method of claim 24.

30. An aqueous solution that is made by the method of claim 26.

31. An aqueous solution that is made by the method of claim 27.

32. An aqueous solution that is made by the method of claim 28.

33. A method for the treatment of a dermatologic or mucosal disorder comprising topically applying an effective amount of aqueous solution of metronidazole having a concentration higher than 0.75% w/w to the site of the disorder and permitting the metronidazole to treat the disorder, wherein the solution comprises beta-cyclodextrin (BCD) and niacin or niacinamide.

15 34. The method of claim 33 wherein the concentration of metronidazole is about 1% or higher.

35. The method of claim 34 wherein the application is once daily.

36. The method of claim 33 wherein the disorder is rosacea.

37. The method of claim 33 wherein the solution comprises niacin and is substantially free of niacinamide.

38. The method of claim 33 wherein the solution comprises niacinamide and is substantially free of niacin.

39. The method of claim 33 wherein the aqueous solution is a gel.

40. A kit for the topical treatment of dermatologic or mucosal disorders comprising a container and an aqueous solution of metronidazole, beta-cyclodextrin, and niacin or niacinamide within said container, wherein the concentration of metronidazole in said solution is higher than 0.75%.

41. The kit of claim 40 wherein the concentration of metronidazole is about 1% or higher.

42. The kit of claim 40 wherein the aqueous solution is a gel.

43. The kit of claim 40 wherein the solution contains niacinamide and is substantially free of niacin.

44. The kit of claim 40 wherein the solution contains niacin and is substantially free of niacinamide.